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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/993,641	11/27/2001	Akitoshi Yamada	862.C2447	8097

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FITZPATRICK CELLA HARPER & SCINTO
30 ROCKEFELLER PLAZA
NEW YORK, NY 10112

EXAMINER	
ROGERS, SCOTT A	

ART UNIT	PAPER NUMBER
2627	

DATE MAILED: 02/10/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/993,641	YAMADA ET AL.	
	Examiner	Art Unit	
	Scott A. Rogers	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *29 November 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-58* is/are pending in the application.

4a) Of the above claim(s) *18-58* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5, 7-15, and 17* is/are rejected.

7)☒ Claim(s) *6 and 16* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date [redacted].
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

Applicant's election without traverse of Group I claims 1-17 in the reply filed on 29 Nov. 2005 is acknowledged.

Claims 18-58 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 5, 7-9, 11, 15, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Shu et al (US 5739917 A).

Referring to claims 1, 5, 11, and 15:

Shu et al disclose an image processing apparatus (computer 10) and method for performing error diffusion processing on multivalued image data having plural density components and outputting the result comprising:

first determination means for, upon execution of said error diffusion processing on a first density component among said plural density components, determining a

threshold value used in said error diffusion processing based on a density value of a second density component;

first error diffusion execution means for executing said error diffusion processing on said first density component based on the threshold value determined by said first determination means;

first output means for outputting the result of execution of said error diffusion processing by said first error diffusion execution means;

second determination means for, upon execution of said error diffusion processing on a second density component among plural density components, determining threshold value used in said error diffusion processing based on a density value of said first density component;

second error diffusion execution means for performing said error diffusion processing on said second density component based the threshold value determined by said second determination means; and

second output means for outputting the result of execution of said error diffusion processing by said second error diffusion execution means.

third determination means for, upon execution of said error diffusion processing on a third density component among said plural density components, determining a threshold value used in said error diffusion processing based on the sum of the density values of said first and second density components;

third error diffusion execution means for executing said error diffusion processing on said third density component based on threshold value determined by said third determination means; and

third output means for outputting the result of execution of said error diffusion processing by said third error diffusion execution means.

Referring to Shu et al, see col. 6, lines 19-39. The computer 10 provides the multiple means to perform the threshold determination, error diffusion, and output functions in claims 1 and 5, and these means perform the method in claims 11 and 15, the functions corresponding the method steps.

Referring to claim 7:

Shu et al disclose that said plural density components are a yellow component, a magenta component, a cyan component and a black component, and said first density component is the cyan component, said second density component is the magenta component, and said third density component is the black component. See col. 6, line 66 to col. 7, line 10.

Referring to claims 8-9:

Shu et al further disclose an image formation means (ink-jet printer 12) for inputting the results of execution of said error diffusion processing output from said first to third output means and performing image formation. See col. 3, lines 34-39 and col. 4, lines 24-44.

Referring to claim 17:

Shu et al disclose a computer readable memory for storing a program for executing the image processing method according to any one of claims 11 and 15. See col. 3, lines 53-63 and claim 22.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 2-4 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shu et al as applied to claims 1 and 11 above, and further in view of Hudson et al (US 6057933 A).

Referring to claims 2-4 and 12-14:

While not disclosed by Shu et al, Hudson et al disclose use of plural tables showing a relation between density and threshold values for determining plural threshold values to be used in an error diffusion process. See col. 4, lines 36-63 and col. 5, lines 16-25.

It would have been obvious to one of ordinary skill in the art to have used the plural threshold tables as taught by Hudson et al in the first and second threshold determination means of Shu et al in order to provide a simple relational look-up of plural

pre-calculated threshold values, thereby avoiding complicated and time consuming threshold calculations, and achieving more efficient performance.

Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Shu et al as applied to claim 9 above, and further in view of well known prior art.

Referring to claim 10:

While Shu et al does not specifically call for an ink-jet printer with an ink-jet print-head that discharges ink by utilizing thermal energy, and wherein said ink-jet print-head has electrothermal transducers for generating the thermal energy to be supplied to the ink, such ink-jet print-heads are notoriously well known in the prior art.

It would have been obvious to one of ordinary skill in the art to have used such a well-known type of ink-jet print-head in order to use a widely available, high performance, low cost print head.

Allowable Subject Matter

Claims 6 and 16 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Cited Art

The art made of record and not relied upon is considered pertinent to applicant's disclosure.

Shu et al (US 5838885 A) discloses an error-diffusion-type half-toning wherein the choice of the quantization threshold varies. Specifically, the threshold-selection process 70 employs a predetermined set of three quantization thresholds, which it assigns to the cyan, magenta, and yellow components in accordance with the relative sizes of their error-adjusted values. The highest error-adjusted component value is assigned the lowest of the three quantization thresholds, the lowest is the assigned the highest, and the intermediate value is assigned the remaining quantization level. For example, if the value that results from adding diffused error to the cyan value C" is the highest of the values thus determined for the three color components, the value of the quantization threshold T_C used for that component's half-toning is the lowest, whereas the other two thresholds T_M and T_Y are higher, their relative values being determined by the relative values of the magenta and yellow error-adjusted values.

Yamada et al (US 2003/0214676) is a later filed application from the same assignee with common inventors and with claims which are broader than the claims in this application. But the claims in this application are not obvious in view of those broader claims and therefore there is no issue of double patenting.

The cited Imafuku et al and other Yamada et al references are later filed applications from the same assignee with some common inventors and subject matter, but with distinct claims. Therefore there are no issues of double patenting

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Scott A Rogers whose telephone number is 571-272-7467. The examiner can normally be reached Monday through Friday 6:00am-2:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kimberly Williams can be reached at 571-272-7471.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to TC2600 Customer Service at 571-272-2600. Official correspondence by facsimile should be sent to 571-273-8300. The USPTO contact Center phone numbers are 800-PTO-9199.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SCOTT ROGERS
PRIMARY EXAMINER

06 February 2006